



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:)
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LeRoy G Hagenbuch)
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Serial No.: 351,179) Group Art Unit: 234
)
Filed: May 12, 1989) Examiner: B. Mattson
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For: APPARATUS AND METHOD)
RESPONSIVE TO THE ON-BOARD)
MEASURING OF HAULAGE)
PARAMETERS OF A VEHICLE)

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Honorable Commissioner of
Patents and Trademarks
Washington, D.C. 20231

Dear Sir:

In compliance with the duty of disclosure set forth in 37 C.F.R. § 1.56, and pursuant to 37 C.F.R. § 1.97, applicant cites and submits the following references listed on the attached PTO-1449 Form for the Examiner's consideration during the examination of the above-identified patent application. A concise statement of the relevance of each reference is set forth below.

Reference AA, U.S. Patent No. 1,261,508 to Gamble

This patent is directed to a mechanism for recording the load, mileage and speed of a truck. A strip chart is used to make a permanent record of each day's use of the truck, showing the load on the vehicle at any time, the time the vehicle is moving the time standing still, the

speed at any point in its travel, the number of stops made to discharge the load and the time of each stop. This information is derived from weight and speed signals developed by sensors mounted on the truck. None of the information that requires accumulation of data, however, is directly available to a user since the data on the strip chart must be interpreted. The only direct information available from the strip chart is the instantaneous load and speed of the truck. Everything else requires mental calculations. For example, to determine the number of stops made to discharge a load, the user must match the times of zero speed with the times of zero load and then add the coincident events to determine the number of stops made to discharge a load. The patent also claims to show mileage made with any load and the roughness of the road, but this type of information requires even more complex mental computations than other information derived from the strip chart data of instantaneous speed and weight (e.g., the foregoing number of stops for discharging a load).

Reference AB, U.S. Patent No. 1,113,609 to Gamble

The patent relates to a device for utilizing the deflection of the springs of a vehicle for weighing the load on the vehicle, the revolution of the wheels being utilized for measuring the distance traveled such that the combination of the weight and distance provide an indication of the ton-miles covered by the vehicle in any

given time. Like the previous patent to Gamble, any information other than instantaneous speed and weight of the load must be derived from the strip chart recording.

Reference AC, U.S. Patent No. 2,586,137 to Yoder et al.

The patent is directed to a mechanism for indicating the amount of a load carried by a truck using a measurement of the force between the sill and subsill of a conventional truck by way of a resilient member having a fluid-filled chamber 22.

Reference AD, U.S. Patent No. 3,559,820 to Munson

The patent provides a system for charging iron ore, limestone and coke into a blast furnace. A sensor 74 in a scale car 26 interacts with a rail 70 having a plurality of openings 72 evenly spaced along its length. As the scale car moves on the rail, the sensor 74 counts the openings in the rail. Weight data for the scale car is provided from load sensors 138 and 140. Weight data from the sensors and positioning data from the sensor 74 are provided to a computer 127 that controls the functioning of the scale car in the system.

Reference AE, British Patent Application No. 2,043,921

The published patent application discloses a microprocessor on-board a truck for the purpose of monitoring the load carried by the truck as sensed by a plurality of sensors 21-24.

References AF, AG and AH

These references are directed to a "DISPATCH" system for use in an open-pit mine environment for selecting the routes taken by haulage vehicles. The system is computer based with a microprocessor-based interface mounted in the haulage vehicles. Applicant believes these brochures to be relatively recent publications. However, reference AF discusses the use of the "DISPATCH" system at Phelps Dodge Tyrone in New Mexico from a time period as early as April, 1980.

Reference AI

This paper discusses the automatic dispatching of haulage vehicles using a computer-based system. The paper is directed to "key concepts in control theory for mine operations management as they apply to truck dispatching." Computer-based dispatching was modeled by a simulator and the functioning of the simulator is analyzed in the article. Like other dispatching systems, the dispatching system described in this article depends on sign posts located within the open-pit mine for identifying the approximate location of a vehicle and communicating that location to a central computer where a dispatching instruction is generated.

Reference AJ

This document is dated April, 1985 and is directed to a computerized truck dispatching system installed in late 1984 at a mining site located in northeastern British Columbia. As applicant understands it, the system disclosed in this brochure is essentially the same "DISPATCH" system disclosed in the previous references.

Reference AK

This pamphlet carries a printing date of 1980 and is directed to a system by ASEA of Sweden for weighing an ore truck as it is being filled. This reference is of particular relevance to claim 1, but it may also be relevant to other ones of the claims.

The ASEA system includes transducers that provide signals to a display unit mounted in the cab of the truck. A digital readout of the front and rear weight appears on the display unit when an appropriate button is pushed. In addition to front and rear axle weights, the system also measures and displays gross load and net load. Furthermore, the brochure indicates that the weight information can be written into an "optional printer to log information." However, it is applicant's present understanding that the "optional printer" was never part of a system available from ASEA and, in this regard, the reference to an optional printer in this pamphlet is nothing more than a "wish list" of features. In the sense of 35 U.S.C. §112, there is no disclosure of a system for

collecting data indicative of the loading and unloading of a vehicle's body, processing the data to provide information regarding the execution of a haulage event and accumulating the data in a storage medium.

Reference AL

This brochure discloses a structure for sensing the weight carried by a vehicle and providing weight information to a meter mounted in the cab of the vehicle.
(Dated 1978)

Reference AM

This reference is a brochure published by applicant's company, disclosing an on-board weighing system substantially as described in applicant's U.S. Patent No. 4,630,227, filed April 27, 1984. The brochure is dated 1984. This application is a continuation-in-part of the '227 patent.

Reference AN

This reference is a publication by the Instruments Society of America describing the "DISPATCH" system sold by Modular Mining Systems, Inc. and installed at the Tyrone mine of the Phelps Dodge Corporation. The dispatching system is illustrated in Figure 3, and it includes a microprocessor-based communications interface panel on board each of the haulage vehicles. As applicant understand it, none of these interfaces include means for

weighing the load of the vehicle, but instead are intended merely as a "convenient way for the operator to communicate with the central computer", which is remotely located.

Reference AO

This document discloses a haulage control system for use in an open-pit mine, particularly in connection with an operation at Reserve Mining Company in Babbitt, Minnesota. As described, applicant understands this system to employ a plurality of "sign posts" that include transmitters that provide an I.D. to a on-board Motorola processor which forwards the I.D. to a central processor for the purpose of identifying the location of the vehicle. The on-board processor includes eight analog inputs and nineteen binary inputs. However, the paper does not discuss or suggest the use of an on-board weighing system in combination with the processor.

Reference AP

This paper discloses a dispatching and vehicle identification system that utilizes sign posts to identify the location of a haulage vehicle and thereby monitor its movement in an open-pit mine. On board each haulage vehicle, a control unit senses a transmission from a sign post and stores the I.D. code in a memory, replacing any previously stored I.D. A central computer polls the control unit on board the haulage vehicle and the control

unit responds by transmitting the I.D. code to the central computer, thereby informing it of the vehicle's position. No mechanism is disclosed or suggestion made concerning an on-board weighing device incorporated into the on-board control unit.

Reference AQ

This paper is directed to the Motorola system used by the Reserve Mining Company at its open-pit mine near Babbitt, Minnesota. This system is also described in reference AO.

Reference AR

This paper is presented by Modular Mining Systems and describes its vehicle dispatching system for use in open-pit mines. The system includes microprocessor-based circuitry mounted on board haulage vehicles, but the system does not include the use of on-board weighing tied to the on-board processor.

Reference AS

This paper discloses a dispatching system for haulage vehicles used in a open-pit mine environment. The system is sold Gould, Inc. and includes an on-board electronics unit that receives I.D. data from sign posts and forward the data to a central computer where the data is used to dispatch the vehicle. The dispatching information is transmitted to the vehicle and displayed on a display unit

as a destination code, which is read by the vehicle operator. There is no disclosure of an on-board weighing system used in connection with this dispatching system.

Reference AT

This paper describes the Motorola dispatching system employed by the Reserve Mining Company at its mine near Babbitt, Minnesota. Although the processor on-board each of the haulage vehicles includes ports for peripherals, there is no mention in the article of any of the peripherals including a device for weighing the load of the vehicle. Instead, it is suggested that the ports be used in connection with a vehicle monitoring system (VMS) for monitoring engine perimeters.

Reference AU

This brochure distributed by Motorola describes its dispatching system employed by the Reserve Mining Company at its mine near Babbitt, Minnesota.

Reference AV

This paper discloses a dispatching system by Modular Mining Systems, Inc. installed at an open-pit mine in British Columbia, Canada. The system disclosed in this paper substantially conforms to the "DISPATCH" system described in previously cited references such as reference AN.

Reference AW

This paper is by employees of Modular Mining Systems, Inc. and discloses a computer-based dispatching system for haulage vehicles. The system includes the monitoring of "vital signs" such as various perimeters of the engine (e.g., temperature, pressure and voltage). There is no suggestion in the paper of including an on-board processor tied to an on-board weighing device for recording haulage events.

Reference AX

This paper is also by employees of Modular Mining Systems, Inc., and it describes the company's "DISPATCH" system operating at the time at Phelps Dodge's Tyrone mine.

Reference AY

This paper again discloses the "DISPATCH" system by Modular Mining Systems operated at the Tyrone mine of Phelps Dodge Corporation. The paper includes an extensive discussion of software considerations for a computer-based dispatching system.

References AZ, BA, BB, BC, BD, BE, BF, BG, BH, BI, and BJ

Each of these references is directed to the "DISPATCH" system manufactured by Modular Mining Systems, Inc. Each of these references is slightly different, but applicant understands each of them to substantially

disclose the same "DISPATCH" system described in previously cited references.

Reference BK

This paper is authored by employees of Modular Mining Systems and is substantially directed to Modular's "DISPATCH" system. The paper is dated 1989.

Reference BL

This paper is dated August 1988 and describes a dispatching system installed in a mine in South Africa by Modular Mining Systems. Microprocessor-based circuitry on board various pieces of equipment monitors certain perimeters. As applicant understands the system as disclosed in this paper, none of those perimeters include the on-board weighing of the load.

REMARKS

The patents and printed publications identified in this supplemental IDS have come to the attention of the applicant in connection with licensing negotiations for related U.S. Patent Nos. 4,839,835 and 4,831,539. The present application is most closely related to the '835 patent as evidenced by the obviousness-type double patenting rejection based on the '835 patent contained in the first Office Action. In this regard, the U.S. patents cited in this supplemental IDS and the published British patent application were identified in connection with

licensing negotiations for the '835 patent. The remaining printed publications were identified in connection with licensing negotiations for the '539 patent.

In view of the foregoing, applicant believes that the cited U.S. patents and the published British patent application are in general more relevant than the other printed publications with respect to the claims of the present application and, therefore, request that the Examiner particularly consider the U.S. patents and published British application. However, the Examiner's attention is particularly directed to the ASEA brochure identified as reference AK.

Applicant respectfully requests that the aforementioned references be entered into the record of the present application and that the Examiner place his initials in the appropriate area on the enclosed PTO-1449 Form, thereby indicating the Examiner's consideration of each of the references. Applicants respectfully submit that the present claims are patentable over the references identified herein and request a timely and favorable examination on the merits of the present application.

Respectfully submitted,

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